

NASA Planetary Data: Applying Planetary Satellite Remote Sensing Data in the Classroom. Patricia Liggett¹, Elaine Dobinson¹, Douglas Hughes¹, Michael Martin¹, Debbie Martin¹, Betty Sword¹ JPL 4800 Oak Grove Dr. Pasadena Ca 91101

ABSTRACT

Introduction: NASA supports several data archiving and distribution mechanisms that provide a means whereby scientists can participate in education and outreach through the use of technology for data and information dissemination. The Planetary Data System (PDS) is sponsored by NASA's Office of Space Science [1]. Its purpose is to ensure the long-term usability of NASA data and to stimulate advanced research. In addition, the NASA Regional Planetary Image Facility is an international system of planetary image libraries and maintains photographic and digital data as well as mission documentation and cartographic data [2]. This poster session will present information on these systems and mechanisms for accessing these data. It will also describe a few of the existing tools and techniques for accessing and understanding science data in the classroom and will provide a view into plans for future applications. By leveraging off these technologies, many of which were developed initially to support the science community, NASA OSS can better utilize these existing programs, engage the science community in education, and provide the education community with additional support in teaching sciences in all classrooms.

Description: There are many challenges to getting the science data collected from the planetary missions into a form and format that can be used by educators in the K-12 classroom. The Planetary Data System (PDS) archives and distributes scientific data from NASA planetary missions, astronomical observations, and laboratory measurements and includes tools and technologies for accessing data by educators and the general public.[1] Likewise the RPIFs, which general holding contains images and maps of planets and their satellites taken by solar system exploration spacecraft provides mechanisms for accessing information[2]. Yet more is needed and more is being done to make science data not only available but also compatible with the lesson planning of the educator and usable within the learning environment of the classroom.

Applications: Both PDS and the RPIFs include images and related documentation available for educators in K-12. In addition, packages such as Welcome to the Planets [3] and tools such as DataSlate [4]

are available for viewing, measuring, and interpreting data from the PDS and other NASA sources.

Benefits to teachers and students. The ability to access "live" data from a repository utilized by the global science community lends meaning to the involvement by the student. In addition, use of "live" space science data helps to inspire and encourage the student to engage in scientific thought and potentially to consider further science study. Applications such as these have been useful not only for teaching and understanding space science but also in teaching fundamentals such as reading and basic research techniques. It also helps to provide the student with a sense of place and purpose within the larger context of space and science. Finally, the use of technologies and capabilities such as these encourages the use of government provided information and resources which in turn helps to encourage the government agencies to provide more support to education applications.

Upcoming activities A working group is being formed to address greater use of PDS, RPIFs and application technologies to support educators use of PDS and RPIFs. In addition, the Dear Mars [5] project, which is currently under early-phase prototyping, will allow students to interact with a Mars's mission in real-time using a natural language interface to send emails to robotic instruments on the surface of Mars.

References:[1] Elaine Dobinson, Planetary Data Systems Homepage, April 12, 01 <<http://pds.jpl.nasa.gov/>> July 19, 01, [2] Debbie Martin, Regional Planetary Imaging Facility, June 21, 00, <<http://www.lpi.usra.edu/library/RPIF/RPIF.html/>> July 19, 2001, [3] Michael Martin, Welcome to the Planets, May, 01, <<http://pds.jpl.nasa.gov/planets/welcome.htm>>, July 19, 01 [4] Michael Martin, DataSlate, <<http://casde.jpl.nasa.gov/dataslate/>>, July 19, 01, [5] Douglas Hughes, Dear Mars, June, 01, <<http://dearmars.jpl.nasa.gov/>> July 19, 01

BIOGRAPHY

Patricia Liggett is a Program Manager at JPL in information system research and development programs and is supporting the Education office in developing ideas and applications for the Planetary Data System in education. She has a background in computer science and has spent most of her 17 years in development of mission operation and science data analysis systems.